The Lamoille Valley Rail Trail

Presented by

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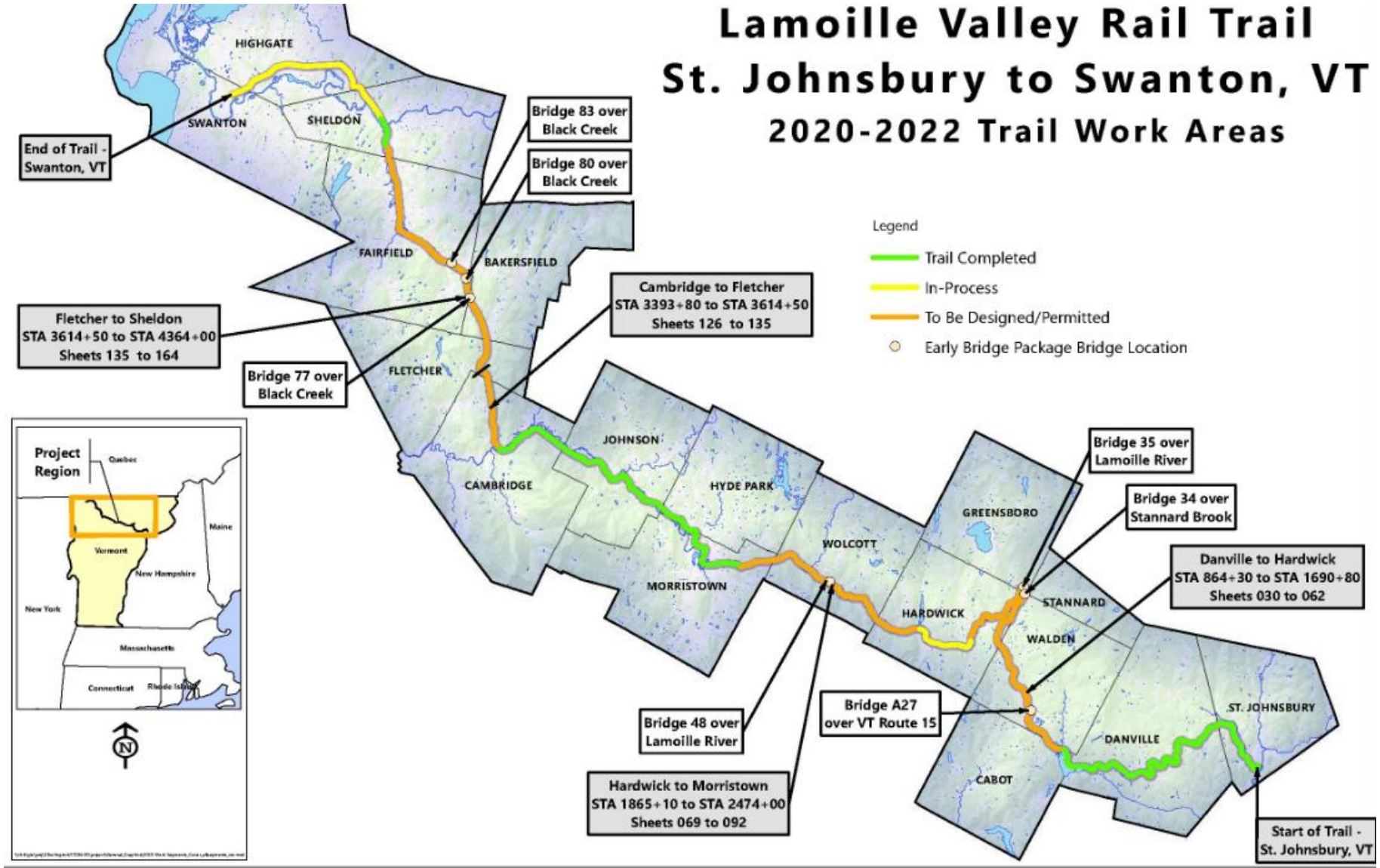
Brief History of the Lamoille Valley Rail Line

- Built in the 1870s as the Vermont Division of the Portland and Ogdensburg Railway
- Intended to connect Portland, Maine to the Great Lakes, but connection west never materialized
- Numerous connections to other lines were made and the line carried passengers and freight for decades
- Passenger service ceased in 1956; the line was sold to the State in 1973
- Railroad continued as a freight line until around 1994, then ceased operations
- VAST submitted a proposal to the State in 2006 to convert the line to the Lamoille Valley Rail Trail

Where is the Lamoille Valley Rail Trail?



Lamoille Valley Rail-Trail Facts

- Extends 96 miles between St. Johnsbury and Swanton
- Passes through 18 different communities
- Nearly 47 miles will be reconstructed and open for public use by the end of this summer
- Trail typical section is a 10-foot wide aggregate surface course with 2-foot wide grass shoulders
- Trail includes 42 bridges and hundreds of culverts and cattle-passes

What Remains to be Constructed?

- Approximately **49 miles** between Danville and Sheldon
- **280** culverts
- **188** crossings
- **45** washouts
- **37** bridges
- **18** cattlepasses

Survey

- Traditional survey would have taken a year
- Too dense of vegetation for drone or lidar
- Tablets loaded with GIS web maps to work offline with R1 GPS Receivers
- Collector application utilized to photograph and note every feature as well as natural resources
- Traditional survey used for 11 bridges
- Stream surveys completed utilizing rod and laser working off a theoretical datum

Culverts

- **280 culverts**
- Major scour pools were a common trend as well as built up vegetation and debris
- Some have 1 foot of cover, others 30 feet
- Every existing stone box culvert required historical review before determining the appropriate construction action
- Modeled all perennial streams and larger
- Re-aligned culverts to better match stream channels horizontally and vertically

Trail Crossings

- **188 trail “crossings”**
- Non-permitted or “renegade,” crossings were blocked, where feasible
- Signing will be upgraded for all crossings
- Challenged crossings
  - Comprehensive site investigation was completed at all crossings with challenged site conditions
  - Crossings were evaluated for skew angle, sight distance, speed/aadt, among other factors
  - Some locations will see more involved measures such as gate posting signing, improved advanced warning signing, and in some cases, flashing beacons

Washouts

- **45 washouts**
- Ponding in trail resulted in raising the trail
- Slope failure was repaired, and erosion protection was applied
- At a handful of locations, the entire trail embankment was washed away and required re-building
- Locations where the existing embankment was not able to support the full trail width, profile lowering was utilized to achieve the desired width

Cattlepasses

- **18 cattlepasses**
- Shall it be demoed?
  - Does it meet historic preservation criteria?
  - Is there a function to the adjacent land owners?
  - Is it structurally stable?
  - Can the necessary safety measures be installed?
  - Does it add to the LVRT atmosphere?

LVRT—
Bridge Work

Re-Assessment of Inventory

- Original assessment completed by VAST in 2009
- Additional inspection by VHB
- Current scope called for assessment of 34 Bridges

Types of Bridges

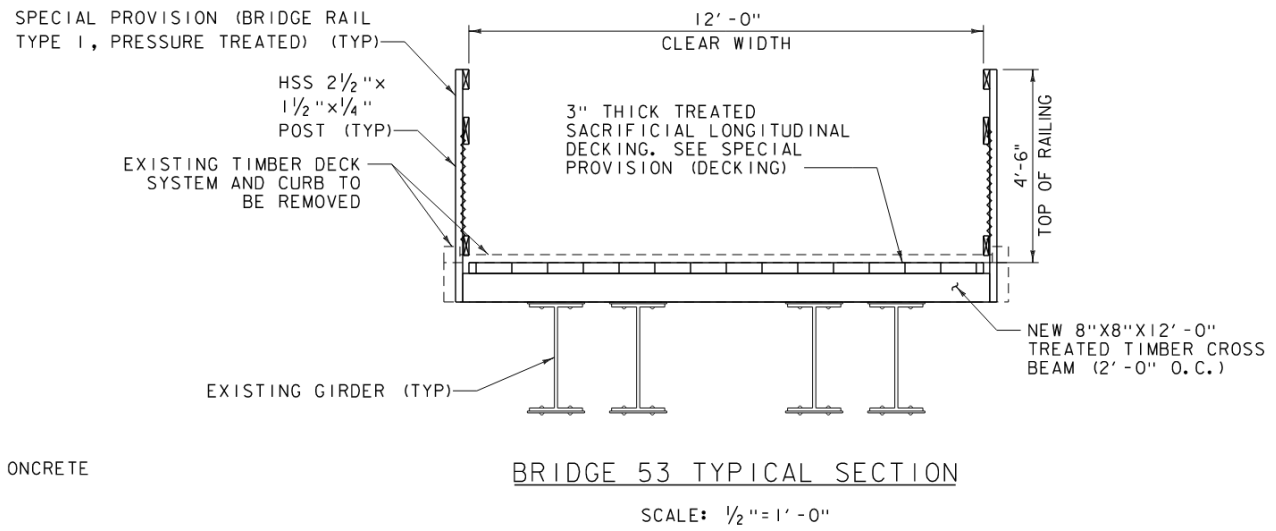
- Steel stingers with timber decks
- Historic trusses
- Concrete slab/rail top
- Stone arches

Inspection Findings

- Deteriorated decks
  - Limited or no railings
- Substructures in poor condition
- Removed superstructures
- Undersized structures
- Damaged superstructures

Design Phase

- Use of pre-fabricated trusses
- Deck replacements
  - Railing installations
- Substructures repairs
  - Repair of concrete
  - Re-pointing mortared joints
  - Re-setting stones

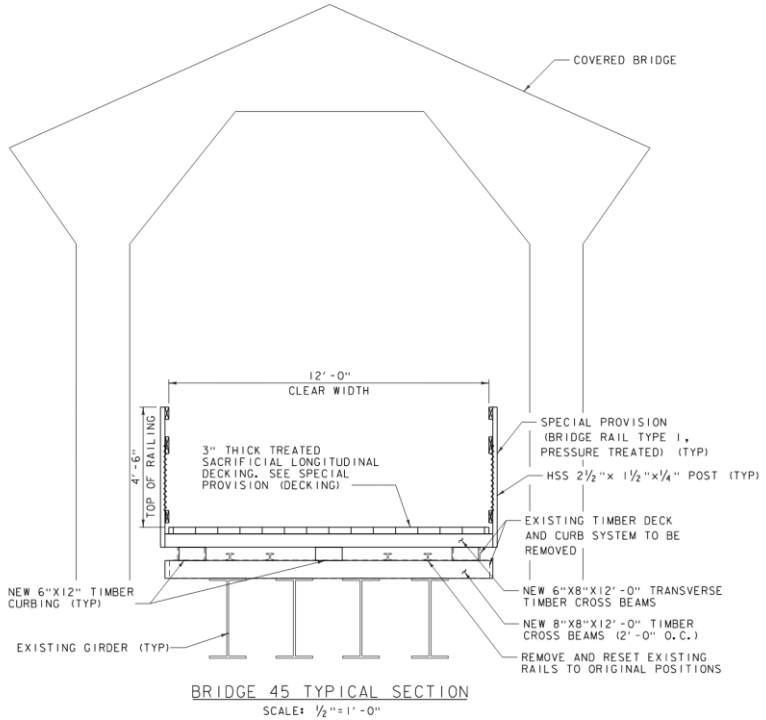


Historic Considerations

- Preserving historic structures
- Re-use of historic trusses

Fisher Covered Bridge

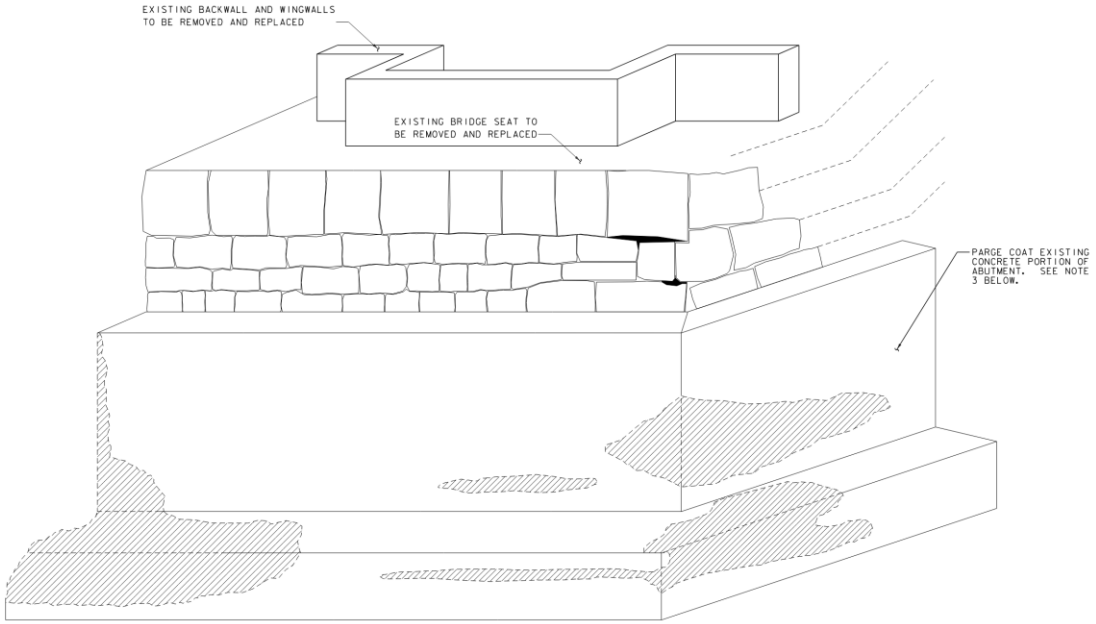
- Minor repairs to the covered truss
  - Remove and replace damaged siding
  - Replace missing trunnel
  - Fire retardant to be applied
- Preserve historic rails



BRIDGE 45 TYPICAL SECTION
SCALE: ½"=1'-0"

Fisher Covered Bridge

- Rehab abutments
- Concrete repairs
- Repointing of masonry
- Replace bridge seats and backwalls



Fisher Covered Bridge

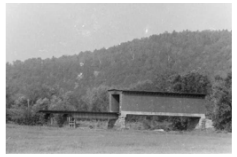
- Installation of access ramp
- Informational panels

The Bridge Road

The St. J and LC was known as the Bridge Route due to the six covered railroad bridges on its route. (The route map identifies locations and facts about each bridge. *The sixth bridge, located in Wolcott, was replaced in 1917 by Baltimore steel through truss, which remains in use.)* The route traversed farmland, small towns, picturesque stations, and at the turn of the 20th century supported a tourist industry. However, for most of its life, local passenger and freight sustained the railroad.

Covered bridges were selected for many crossings due to the lower cost of construction compared to iron. By 1968, the railroad was struggling to keep up with the roadway truck competition. The light rails and covered bridges could not support the increased weight of the engines and freight. In a gamble to make the line profitable its multiple covered bridges were replaced by steel spans to increase the carrying capacity of the line. Only two of the lines covered bridges were spared. The timber deck structure of the Fisher Covered Bridge was removed and replaced with a steel girder and in Swanton, traffic was rerouted to the Central Vermont Railroad lines, sparing the three-span covered bridge.

Swanton Covered Bridge
3 span, 369' long
Built 1898, burned 1987



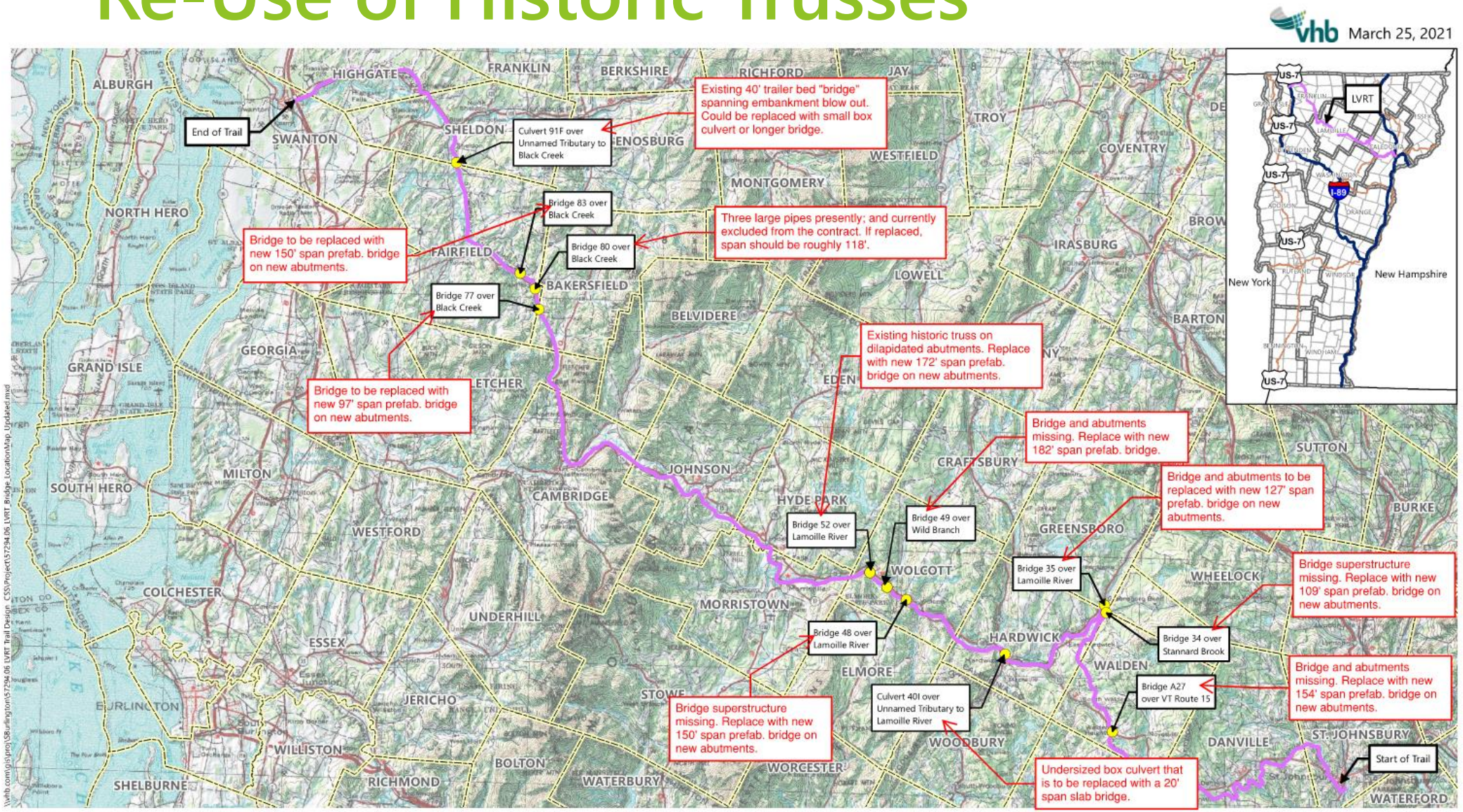
Cambridge Junction, Br 68
113' span
Built 1899, replaced 1967

Peck Bridge, Wolcott
120' Town Lattice Truss
Built 1906, replaced 1967

Fisher Bridge, Wolcott
103' span
Built 1908

Hardwick Covered Bridge
98' double Town Lattice Truss
built 1909, burned 1959

Re-Use of Historic Trusses



There’s more to it than meets the eye…

Permitting

- CE Re-evaluation (NEPA)
- Section 106 Determination of Effect (APE Memo)
- Section 404 Clean Water Act (USACE GP-18)
- Section 401 Water Quality Certification (DEC)
- Vermont Wetland Permit (DEC Vermont Individual Wetland Permit)
- Construction Phase Stormwater Discharge (DEC 6852-INDC.1)
- Title 19 Consultation (DEC Rivers Program)
- Flood Hazard and River Corridor (DEC FHARC)

Site Balancing

- Estimated 28,300 cubic yards of excess, potentially contaminated, material
- Re-use of structurally suitable native material in washouts, locations of trail raising, and embankment slope repairs
- Pause places
- Strategically placed mounds

ROW Encroachments

- Two most common were non-permitted ATV/Farm crossings and cattle fences
- The coolest one was a decerped bridge over a small gorge
- Most bazar one was a concrete bunker

Neat Features

- Greensboro Bend train car
- Hardwick railroad station
- Old mill building
- Salvaged rail and tie plates utilized to make mile markers
- Re-use of the historic trusses
- Fish and wildlife pull-offs

Bringing the Community Together

- The LVRT connects 18 towns through one shared network
- Multiple trail heads and parking areas in each town provide ample access for all users
- Trail connections to other trails
- Trail connections to town resources
- Snowmobile clubs groom and maintain the trail throughout the winter
- Charity bicycle rides have already taken place on the trail sections that are complete
- Breweries have opened along the trail and provide “Bike and Brew” tours

Questions?

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